

WEBVTT

1

00:00:03.090 --> 00:00:23.880

Geraldine Servant: I'm showing you the effective potential of the Higgs, but this could be the production of any scalability. So the way you, what you do is, we conclude the free energy of the gas particles which whose masses are given by is a scholar fields that

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00:00:25.020 --> 00:00:33.300

Geraldine Servant: Okay, so you are looking at the energy of these particles which become massive during the first condition. So,

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00:00:33.300 --> 00:00:33.510

Geraldine Servant: That

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00:00:33.810 --> 00:00:37.260

Geraldine Servant: They become some of them. Not only that, mystic like

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00:00:38.850 --> 00:00:42.540

Geraldine Servant: Who is he, and he's become very massive the top crack

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00:00:43.320 --> 00:00:47.700

Geraldine Servant: On so essentially you look at a gas of particles.

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00:00:50.160 --> 00:01:02.730

Geraldine Servant: Who's mass is proportional to the his back here. Okay. So inside the bubble electronic symmetry is broken means that the background expectation value of the heat is not zero.

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00:01:03.300 --> 00:01:12.630

Geraldine Servant: But outside it's zero. So if you want the blue region corresponds to this account and the black region corresponds to this phone.

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00:01:14.670 --> 00:01:17.850

Geraldine Servant: So now when you have just a symmetric, but

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00:01:17.880 --> 00:01:19.680

Geraldine Servant: You don't produce gravitational waves.

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00:01:20.340 --> 00:01:22.830

Geraldine Servant: What we produce gravitational raises the breaking of

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00:01:23.880 --> 00:01:26.520

Geraldine Servant: The spherical symmetry and Wednesdays barbers collide.

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00:01:28.800 --> 00:01:36.960

Geraldine Servant: Then in the vicinity of the votes, you have. Yeah, it's a very complicated process, and I should probably show

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00:01:38.700 --> 00:01:50.070

Geraldine Servant: I have not quoted the original paper which is coast to coast, he will first use this envelope approximation to estimate the gravitational wave spectrum.

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00:01:51.090 --> 00:01:52.560

Geraldine Servant: And nowadays are more

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00:01:52.620 --> 00:01:56.340

Geraldine Servant: Powerful simulation, which in fact

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00:01:58.440 --> 00:01:59.550

Geraldine Servant: Most confirm

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00:02:00.030 --> 00:02:02.940

Geraldine Servant: The results of general observation. Also, they are some

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00:02:05.190 --> 00:02:12.510

Geraldine Servant: Some distinctions some little details which show that point sense to determine this shape here depends on the details.

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00:02:14.040 --> 00:02:21.060

Geraldine Servant: So yeah, there are different techniques and morality analytical techniques. Some legit simulations to really complete

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00:02:22.740 --> 00:02:24.300

Geraldine Servant: The details of this variation

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00:02:24.300 --> 00:02:29.940

Geraldine Servant: With so maybe I'm not sure this is answer the question, but the key.

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00:02:31.710 --> 00:02:35.460

Geraldine Servant: I should show here. This is the dominant sources, this one.

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00:02:36.930 --> 00:02:39.330

Geraldine Servant: So here are the velocity

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00:02:40.050 --> 00:02:40.830

Geraldine Servant: Of the fluids.

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00:02:41.940 --> 00:02:55.920

Geraldine Servant: To the velocity of the fluid and you can, in fact, if you have a model for if you have an analytical model you can get in mind. What is this video city. The city shelter lots of other words. Also, there are ways to do this.

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00:02:55.920 --> 00:02:56.640

Geraldine Servant: And I need to keep

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00:02:57.930 --> 00:03:00.390

Geraldine Servant: That he I'm sure that they are also

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00:03:00.930 --> 00:03:02.070

Very more accurate.

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00:03:03.150 --> 00:03:04.290

Geraldine Servant: Simulations which

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00:03:05.340 --> 00:03:06.330

Geraldine Servant: Which comes to this.

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00:03:07.440 --> 00:03:08.790

Geraldine Servant: Does this answer the question.

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00:03:11.280 --> 00:03:11.550

dong su: So,

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00:03:12.540 --> 00:03:26.730

Geraldine Servant: This is really the kinetic energy is fluid, the flows which is then used to this nice little bit stressed. And so, which is then the source of the way the equation here. Nice to see some launching

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00:03:29.730 --> 00:03:30.360

Geraldine Servant: A spectrum.

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00:03:32.760 --> 00:03:53.670

dong su: Yeah, I think that you've mentioned provided for that and let's just move on to the next question. So the next question is a pre go into a little bit more detail on the tension between EDM. I think maybe not everyone probably familiar. In what ways was attention and and the lateral week

37

00:03:54.780 --> 00:03:55.500

dong su: Our Genesis

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00:03:56.850 --> 00:03:57.480

Geraldine Servant: Yes, so

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00:03:59.190 --> 00:04:00.360

Geraldine Servant: In the standard model.

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00:04:01.170 --> 00:04:03.960

Geraldine Servant: What first of all the information is not first order.

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00:04:04.350 --> 00:04:20.550

Geraldine Servant: But let's imagine, even if it was first order, you still need to satisfy for virginity is a second second ingredient which is we need to be violation. But if you were just to do this calculation using the UK walk up to the standard model, you would not have enough

42

00:04:21.810 --> 00:04:23.340

Geraldine Servant: You really need much more

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00:04:24.930 --> 00:04:31.890

Geraldine Servant: So you need to introduce new companies, new evaluating source when we know that when we do this.

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00:04:33.840 --> 00:04:41.700

Geraldine Servant: We are going to predict EDM. And these are very constraints. So that's one of the problems it to be very Genesis

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00:04:43.320 --> 00:04:46.050

Geraldine Servant: And this is actually destroyed by this disease. I skipped.

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00:04:46.410 --> 00:04:50.970

Geraldine Servant: But this is a typically, you know, the back of the envelope calculation for it to which

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00:04:51.420 --> 00:04:52.470

Geraldine Servant: Region is this, this is

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00:04:52.740 --> 00:04:53.880

Geraldine Servant: How you estimate

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00:04:54.120 --> 00:04:56.280

Geraldine Servant: And it's beautiful. It shows you how you can get

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00:04:56.940 --> 00:04:59.940

Geraldine Servant: To pick the right amount of volume a symmetry. If you have

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00:05:01.140 --> 00:05:07.740

Geraldine Servant: Large city valuation and suppressed sources of violence prevention, just on an order, you will surprise because

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00:05:07.950 --> 00:05:09.660

dong su: Our copies are too small.

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00:05:10.500 --> 00:05:12.120

Geraldine Servant: And so

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00:05:13.710 --> 00:05:18.300

Geraldine Servant: The best so you know in supersymmetry, for instance, you have new sources, but they're also

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00:05:18.300 --> 00:05:25.020

Geraldine Servant: very constrained by EDM to one promising way was to use the top coupling to

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00:05:26.250 --> 00:05:27.720

Geraldine Servant: The new Stella fields here.

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00:05:28.740 --> 00:05:30.660

Geraldine Servant: And I mentioned the data, for instance.

58

00:05:32.310 --> 00:05:50.310

Geraldine Servant: So this new gardens will eat with them. So these are testable. But in the case of on positive models who are still fine but it's true. It's a major concern. So to answer the question, simple answer is you need new last evaluation for successfully little villages.

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00:05:50.940 --> 00:05:54.030

Geraldine Servant: And this new sources of safety violation.

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00:05:54.870 --> 00:05:55.890

Just idioms.

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00:05:57.120 --> 00:06:07.800

Geraldine Servant: So one way out is to try to do it to emergency that high scale. That's why I mentioned the possibility to push the temperature of initial phase condition.

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00:06:08.970 --> 00:06:15.300

Geraldine Servant: Then you would be able to use higher scale specificity regulation, which are less constrained by

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00:06:16.920 --> 00:06:24.870

Geraldine Servant: But yeah, this is one of the main and you know with improvement is bound gets tighter and tighter. This is clearly

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00:06:26.670 --> 00:06:29.850

Geraldine Servant: A major challenge for the three religions, so

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00:06:31.080 --> 00:06:47.700

Geraldine Servant: The first order to function is not difficult. It's easy to get the first of the faith and mission. What is not easy to get enough CPU and relation without violating such a bond to one approach is to do city violation in the doc sectors is there is literature.

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00:06:49.140 --> 00:06:53.970

Geraldine Servant: To see the relation from dark matter interacting

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00:06:54.090 --> 00:06:54.960

dong su: With other words

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00:06:55.170 --> 00:06:56.700

Geraldine Servant: They are either. So you exposed to, but

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00:06:56.910 --> 00:06:57.420

dong su: Still

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00:06:58.260 --> 00:07:06.540

Geraldine Servant: It's still possible to achieve it. But yeah, he wants to go a little bit beyond the original ideas which were proposing the 90s.

71

00:07:08.970 --> 00:07:13.020

dong su: Okay, thanks. So the next question on page 36

72

00:07:18.060 --> 00:07:29.220

dong su: Is actually mentioned the potential to be a conformal so the, what is the meaning what what it means for the potential to become formal a little funny that term needs better explanation.

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00:07:30.270 --> 00:07:32.040

Geraldine Servant: So here's the ideas that I have

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00:07:35.820 --> 00:07:37.800

Geraldine Servant: Essentially I have no skin in my modem.

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00:07:38.820 --> 00:07:41.100

Geraldine Servant: No mass case. So in contrast with

76

00:07:42.270 --> 00:07:58.110

Geraldine Servant: His potential. You have the contract term. You have a new squared is a potential. Now we are talking about the model where they are no space and you'll just have the capability to rewatch it term for your, for your field director

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00:07:59.670 --> 00:08:05.400

Geraldine Servant: And all the masses arise through spontaneous breaking of the same

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00:08:06.810 --> 00:08:09.480

Geraldine Servant: Confirm or symmetry, you have a strong sector.

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00:08:10.800 --> 00:08:11.310

dong su: And

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00:08:11.550 --> 00:08:14.580

Geraldine Servant: You have some dimensional confrontation.

81

00:08:15.720 --> 00:08:24.420

Geraldine Servant: So that's what I mean here and when this field across the vegan expectation value you are breaking from foremost

82

00:08:25.530 --> 00:08:44.670

Geraldine Servant: There is a holographic drawn to this, which I run that single mothers and here is a dilettante would be corresponding to the so called radio on that single mothers, fathers family. I was as mothers and which were very, very popular now in the early 2000

83

00:08:46.530 --> 00:08:54.030

Geraldine Servant: So, so there is a lot of interest because this is not this is a model which is addressing the hierarchy hierarchy problem.

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00:08:55.710 --> 00:08:57.150

Geraldine Servant: Through compulsiveness

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00:08:58.740 --> 00:08:59.340

Geraldine Servant: So,

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00:08:59.430 --> 00:09:09.120

Geraldine Servant: The idea that at high temperature. Yeah, there's no scale and it goes require massive resistance from venues Reiki

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00:09:11.940 --> 00:09:16.410

dong su: Okay, thanks. So the next questions or

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00:09:17.880 --> 00:09:18.390

dong su: On page.

89

00:09:22.200 --> 00:09:23.400

dong su: This on

90

00:09:25.410 --> 00:09:26.310

dong su: The diagram.

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00:09:27.570 --> 00:09:35.700

dong su: So does the graph then show possibilities that there are many strong colors that we do not observe today.

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00:09:38.940 --> 00:09:43.320

Geraldine Servant: Yeah, so if you want it. He is the idea that you have a new

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00:09:44.640 --> 00:09:48.210

Geraldine Servant: Somebody interacting sector. So you could think of to see that now.

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00:09:49.290 --> 00:09:52.950

Geraldine Servant: You have a TV scary. Some strong dynamics.

95

00:09:54.300 --> 00:09:58.140

Geraldine Servant: So you have the equivalent of marathons and hard loss.

96

00:09:58.740 --> 00:10:00.120

Geraldine Servant: But you to a new

97

00:10:00.990 --> 00:10:08.790

Geraldine Servant: New force and you have some new global symmetries. And he has a new degrees of freedom.

98

00:10:10.500 --> 00:10:11.250

Geraldine Servant: I carry

99

00:10:13.440 --> 00:10:18.930

Geraldine Servant: Carry On carrion quantum number. If you want and still here. Yes.

100

00:10:20.880 --> 00:10:22.140

Geraldine Servant: I causes Carlos.

101

00:10:22.530 --> 00:10:32.100

Geraldine Servant: You could think of them as well. This is related to the total number of new degrees of freedom. So this is one key parameter

102

00:10:32.430 --> 00:10:32.880

Geraldine Servant: In those

103

00:10:33.450 --> 00:10:43.770

Geraldine Servant: modem. So, one important quantities of the Latin Mass and for the nature of the first transition and is very important to

104

00:10:44.970 --> 00:10:53.700

Geraldine Servant: An end is in fact on as a typical copying of this new particles in this time interacting gas.

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00:10:54.810 --> 00:10:56.580

Geraldine Servant: Just depends on on an

106

00:10:57.840 --> 00:11:00.150

Geraldine Servant: It's an important factor because this

107

00:11:01.440 --> 00:11:07.350

Geraldine Servant: Isn't just us as a mass of the composite states depends on G stands for depends on capital N

108

00:11:09.000 --> 00:11:12.330

Geraldine Servant: So it's a it's a it's an important parameter. In fact,

109

00:11:13.590 --> 00:11:14.430

Geraldine Servant: Which enters

110

00:11:14.520 --> 00:11:17.880

Geraldine Servant: Into the calculation of the generating probability

111

00:11:22.050 --> 00:11:38.910

Geraldine Servant: So if you wanted to the mothers, where you have a hot CMT gas at high temperature and then you pull down and eventually you'll do a film are just composite states laser had Johnson's Amazon's but there as a TV stay

112

00:11:44.040 --> 00:11:44.400

dong su: Okay.

113

00:11:44.430 --> 00:11:54.060

Geraldine Servant: They are predictions of this composite six motors and you should you should expect or this composite resonance that beyond that to this day, but we have not observed

114

00:11:54.660 --> 00:11:55.260

Geraldine Servant: Any of those

115

00:11:58.500 --> 00:12:05.790

dong su: Okay, so maybe jump to the last one, since it looks like my colleagues on us maybe in terms, this one.

116

00:12:07.410 --> 00:12:19.440

dong su: So how do the the Higgs limit. I like to see or possibly hard enough, LLC compared to the limits or Hicks panel that Lisa my towers.

117

00:12:23.040 --> 00:12:23.850

Geraldine Servant: Yeah, so

118

00:12:25.950 --> 00:12:34.230

Geraldine Servant: So program. He is that as soon as you are considering reality TV resonances to be difficult, a village see

119

00:12:35.340 --> 00:12:35.850

Geraldine Servant: Why he

120

00:12:37.230 --> 00:12:44.430

Geraldine Servant: Would be able to probe beyond the TVs can really the reality TV range. So let me so

121

00:12:49.410 --> 00:12:51.510

Geraldine Servant: I had a sensitivity earlier.

122

00:12:52.800 --> 00:12:53.730

Geraldine Servant: Trying to find it.

123

00:12:56.370 --> 00:13:01.170

Geraldine Servant: Yes. So, Lisa. You see that there is this horse sensitivity and so a typical spectrum.

124

00:13:01.350 --> 00:13:10.980

Geraldine Servant: For a function at 200 God will be here. Now I can shift to the TV ality TV and I will still be able to observe

125

00:13:11.520 --> 00:13:27.870

Geraldine Servant: Maybe not repeat, but at least the low frequency part of the of the spectrum. So this is really an interesting window beyond the TV station and we can force me to to this case that you will not be able to probe them existing

126

00:13:31.020 --> 00:13:34.470

grzegorz madejski: We should probably think about wrapping up now because we're running a little late here.

127

00:13:36.030 --> 00:13:36.420  
dong su: So right

128  
00:13:36.480 --> 00:13:37.680  
dong su: So, go ahead.

129  
00:13:37.920 --> 00:13:40.500  
dong su: Okay, so yeah, maybe, maybe that's an end there.

130  
00:13:43.020 --> 00:13:52.560  
grzegorz madejski: Okay, thank you very much. Geraldine for this very interesting talk. I have to apologize that we had a little bit difficult. It was an operator intensive recording, so if you ever want

131  
00:13:53.190 --> 00:14:06.300  
grzegorz madejski: To watch this those maybe about three or four minutes missing in the beginning of the of your presentation, but that was probably just extra material. Anyway, thank you very much. We very much appreciate the fact that you've been making and

132  
00:14:07.470 --> 00:14:13.050  
grzegorz madejski: We hope that you'll be able to even listen to the remaining couple talks that would be really interesting later on today.

133  
00:14:13.920 --> 00:14:14.760  
Geraldine Servant: Thanks a lot.

134  
00:14:16.230 --> 00:14:23.670  
grzegorz madejski: Okay, thank you. So for the participants. We have about five minute break. So we're going to start at 1023 we run a little late today. Thank you.